REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated September 25, 2008. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

As outlined above, claims 11-16 stand for consideration in this application, wherein claims 11, 14, and 15 are being amended.

All amendments to the application are fully supported therein. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Interview Summary

A telephonic interview was conducted with the Examiner Chuong D. Ngo on November 12, 2008.

During the interview, Applicants representative contended that the methods claimed in the present application are patentable subject matter under the decision in *In re Bilski* because the claimed methods are tied to a specific machine or apparatus, and the claimed methods are directed to practical applications. The Examiner agreed with Applicants' contention that the claimed methods are tied to a specific machine or apparatus. On the other hand, agreement was not reached with respect to whether the claims in the present application are directed to a practical application(s). The Examiner still asserted that the claims have to be directed to a practical application, or the claimed method has to produce useful, concrete, and tangible results to be patentable under 35 U.S.C. §101. The Examiner, however, suggested amending the preamble of the claims in the present application as set forth above so as to be directed to a practical application(s).

Objection to the Abstract of the Disclosure

The Abstract of the Disclosure was objected to on the grounds of not being within the range of 50 to 150 words according to MPEP §608.01(b). Applicants respectfully traverse this objection and the Examiner's requirement for Applicants to amend the abstract.

Rule 1.72 (b) and MPEP §608.01(b) sets forth that the abstract may not or should not exceed 150 words in length. However, the US patent law, particularly 35 U.S.C. §112 does not expressly limit the range of the words of the abstract. Applicants have properly provided the abstract which meet 35 USC §112.

Accordingly, withdrawal of this objection is respectfully requested.

35 U.S.C. §101 Rejection

Claims 11-16 were rejected under 35 U.S.C. §101 on the grounds that the claimed invention is directed to non-statutory subject matter referring to *State Street, 149 F.3d 1368 (Fed.Cir. 1998)*. Applicants respectfully traverse this rejection for the reasons set forth below.

The Federal Circuit Court recently held that a claimed process is surely patent-eligible under 35 U.S.C. §101 if (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. *In re Bilski, 545 F.3d 943, 966 (Fed.Cir. 2008)*. (The emphasis is added.) The court further stated that the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility. *Id at 962.* The court also concluded that the "useful, concrete, and tangible result" inquiry is inadequate and the machine-or-transformation test is the proper test to apply although in many cases it may provide useful indication of whether a claim is drawn to a fundamental principle or a practical application of such a principle. *Id at 982.*

Claims 11-15 are directed to methods for improving efficiency in processing a data array "with a parallel-processing computer" in computation including Fourier transformation. More specifically, claims 11-15 recite specific ways of processing a data array with a plurality of processors in a parallel computer. Clearly, the methods recited in claims 11-15 are tied to a particular machine or apparatus, namely a plurality of processors in a parallel computer. The ways of using a plurality of processors in a parallel computer recited in claims 11-15 do not embody mere data transformation, but rather specific operations of the processors relative to each other. Therefore, Applicants respectfully submit that claims 11-15 meet the machine or transformation test in *In re Bilski.*

Furthermore, claims 11-15 are directed to practical applications because the methods recited in claim 11-15 are for improving efficiency in processing a data array in computation including Fourier transformation.

In the conventional parallel computing method using permutation processes, processors in a parallel computer carry out transformations of data in the Y, X and Z

directions in a completely independent way, but every processor in the parallel computer needs to transfer data to all the other processors in the permutation process. Since it generally takes much more time to transfer data than to process the transferred data, time for transferring data is a bottleneck of the entire computing time. (See page 10, line 14-page 11, line 9 of the specification.)

In contrast, in the methods recited in claims 11-15, data transformation and data calculation processes can be performed simultaneously by dividing each Y-direction transformation and X-direction transformation in the permutation processes into two partial processes and changing the order of calculation processes. Accordingly, efficiency in processing a data array in computation including Fourier transformation will be improved compared with the conventional parallel computing method. Clearly, the methods recited in claims 11-15 are not the mere realization of fundamental principles, but rather an improvement in the computation process, which is a practical application.

Finally, in view of the decision in *In re Bilski*, Applicants respectfully submit that the "useful, concrete, and tangible result test" should not be applied to determine whether or not a claimed method is patentable subject matter.

In sum, considering the decision in *In re Bilski*, claims 11-15 are patentably-eligible under 35 U.S.C. §101. Accordingly, withdrawal of the rejection of claims 11-15 under 35 U.S.C. §101 is respectfully requested.

Claim 16

Claim 16 recites a specific computer performing the specific ways of processing a data array with a plurality of processors in a parallel computer, and thus recites patentable subject matter under 35 U.S.C. §101.

"A computer" is considered "an apparatus", and thus patentable subject matter under 35 U.S.C. §101. Also, as set forth above, the ways of processing a data array performed by the computer is also patentably-eligible under 35 U.S.C. §101. Therefore, a computer as recited in claim 16 is patentable subject matter under 35 U.S.C. §101. Accordingly, withdrawal of the rejection of claim 16 under 35 U.S.C. §101 is respectfully requested.

Conclusion

In light of the above Amendments and Remarks, Applicants respectfully request early and favorable action with regard to the present application, and a Notice of Allowance for all pending claims is earnestly solicited.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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